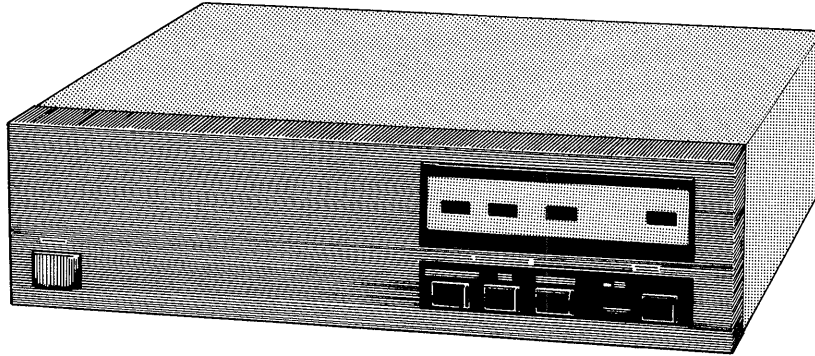


CDG-3000

SERVICE MANUAL

UK Model



SPECIFICATIONS

Circuit format	CD graphics format (NTSC format)
Input terminals	CD KARAOKE (D-sub 9-pin connector) for Sony CD karaoke use only. LD (phono jack) 1 Vp-p 75 ohms, unbalanced CAMERA (phono jack) 1 Vp-p 75 ohms, unbalanced
Output terminals	VIDEO output 1, 2, 3 (phono jacks) 1 Vp-p 75 ohms, unbalanced
Power requirements	240V AC, 50Hz
Power consumption	11 Watts
Dimensions	355×95×340 mm (w/h/d) (14×3¾×13½ inches) incl. projecting parts and controls
Weight	Approx. 3.6 kg (7 lbs 15 oz)
Supplied accessories	Phono plugs (2) F type connector (1) Ground wire (1)

Design and specifications subject to change without notice.

CD KARAOKE SYSTEM
GRAPHICS DECODER
SONY®

TABLE OF CONTENTS

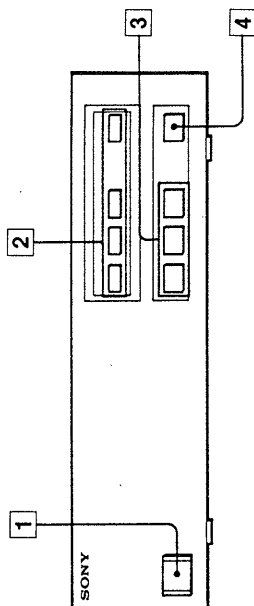
<u>Section</u>	<u>Title</u>	<u>Page</u>
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SECTION 1

GENERAL

Parts Identification

Front Panel



1 POWER switch

Press the POWER switch to turn on the power. When power is applied by pressing the POWER switch, a blue ground appears on the screens of the video display units or the television set.

2 INPUT indicators

Pressing an input selector causes the corresponding indicator to light.

3 INPUT selectors

Select the image (input) to be displayed.
CD KARAOKE: For input from the CD Karaoke system connected to the CD KARAOKE terminal on the rear panel of the unit.

LD: For input from a video disc player or video deck connected to the LD terminal on the rear panel of the unit.

CAMERA: For input from a video camera, video disc player, or video deck connected to the CAMERA terminal.

Even if LD or CAMERA has been selected, the image on the screen will automatically change to a CD graphics image when the CD Karaoke system connected to the CD KARAOKE terminal on the rear panel starts to play.

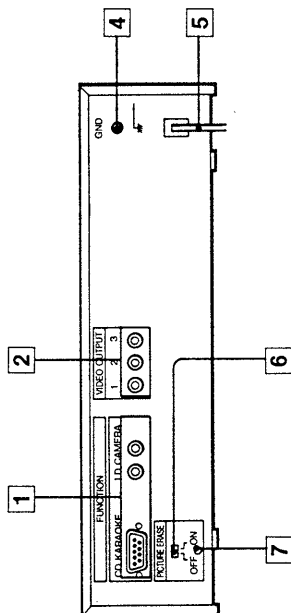
4 EDIT selector

ED: Push the button to play an EDIT-A-VISION disc. The ED indicator will light. When you play a laser disc or other media connected to the LD or CAMERA terminal while the indicator is on, the characters from the EDIT-A-VISION disc can be superimposed onto the selected video image.

ART: To play a CD ART Karaoke disc, push the selector button to turn off the ED indicator.

Parts Identification

Rear Panel



1 FUNCTION terminals

CD KARAOKE: Use the 9 pin connecting cable (supplied with the CDK-3300PI) to connect this terminal to the accessory terminal of the CD Karaoke system.

LD:

Connect this terminal to a video disc player or a video deck.

CAMERA:

Connect this terminal to a video camera, a video disc player, or video deck.

2 VIDEO OUTPUT terminals

Connect these terminals to video displays with a video input terminal.

4 GND (Ground) terminal

Use the supplied ground wire to connect this terminal to the GND terminal of the CD Karaoke system or the auto disc loader.

5 Power cable

The switch is normally set to OFF. When set to ON,

the graphic image on the screen automatically changes to a blue ground when the disc play stops. When set to OFF, the graphic image remains on the screen even when the disc play stops.

7 Color check button

When the POWER switch is pressed while pressing the color check button, a color check pattern appears on the screen. Use this pattern to adjust the hue, tint, or brightness of the video display units or the TV set. After adjustment is completed, turn the POWER switch off momentarily, then turn it on again.

SECTION 2

ELECTRICAL ADJUSTMENTS

• **Measuring instruments required :** Frequency counter, Oscilloscope, Vectorscope

• **Switch positions :**

- FUNCTION (CD KARAOKE, LD, CAMERA) switch : CD KARAOKE
- EDIT (ED, ART) switch : ART
- PICTURE ERASE switch : ON

• **Connections :**

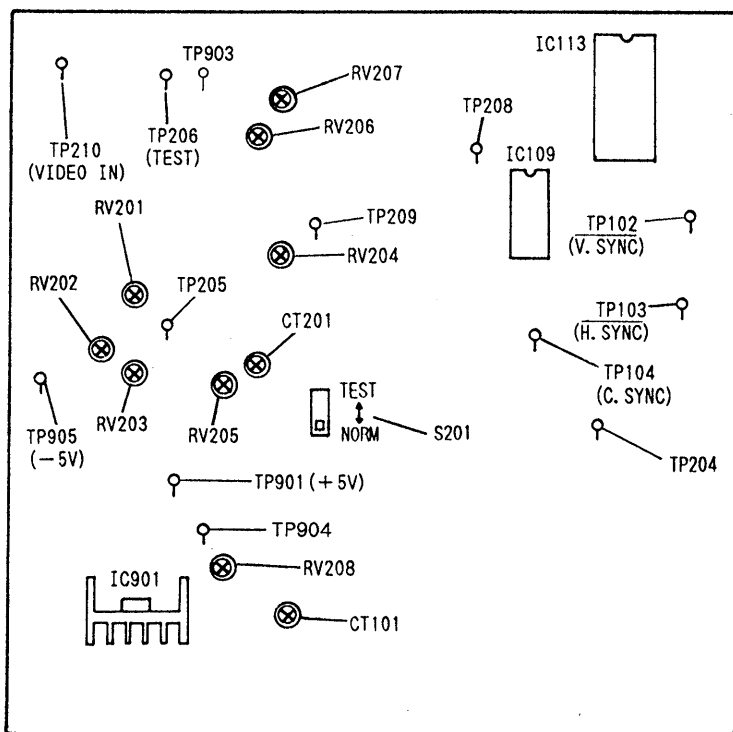
- Sub-code input, CD KARAOKE : CDK-3000P or CD Player with PLAY MUTE output
- Video input (NTSC)

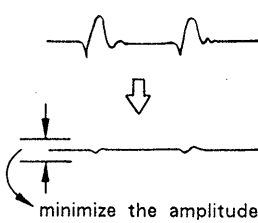
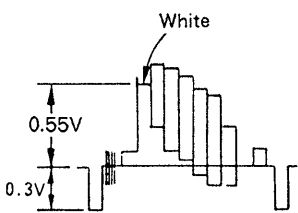
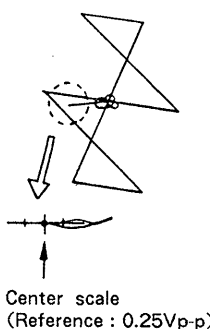
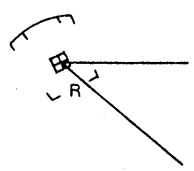
1	: Laser Disc or equivalent
2	: Camera or equivalent
- Video output (NTSC)

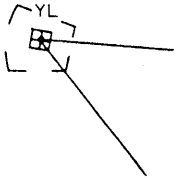
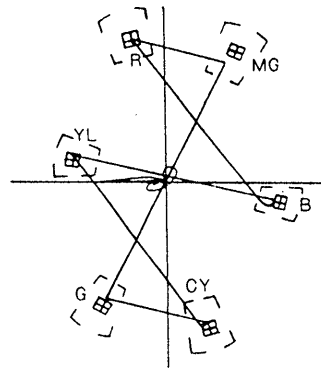
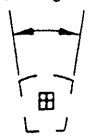
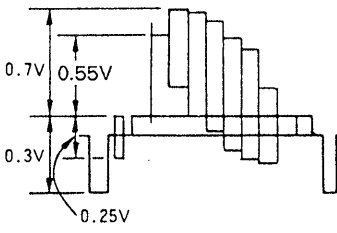
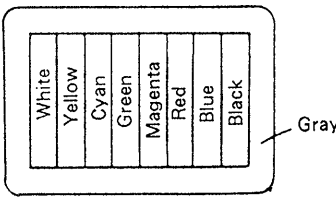
1	: Vectorscope → Monitor TV (1)
2	: Monitor TV → Monitor TV (2)
3	: Monitor TV → Monitor TV (3)

[Parts Arrangement Diagram for Adjustment]

Main board —Component Side—



ITEM	PROCEDURE	SPECIFICATION	REMARKS
Power Voltage Check	1) While pushing S502 (COLOR CHECK), turn on the power switch on the rear side of the set. 2) Connect a digital tester and check each output voltage.	2) +5 V TP901 -5V TP905 GND TP904	
1. 3.58 MHz Adjustment	1) Connect a frequency counter to TP204 on Main Board, and adjust with CT101 (Red) so as to satisfy the specified value.	1) 3,579,545 $\pm$ 10 Hz	
2. VCXO Adjustment	1) Connect an oscilloscope to TP205 and adjust with CT201 (Green) so that the waveform becomes to the specified value.	1) 	Oscilloscope H 5mS/DIV V AC 50 mV/DIV Trigger V. SYNC (TP102)
3. White Level Adjustment	1) Connect an oscilloscope to TP501 on Pin Jack Board and adjust with RV205 so as to satisfy the specified value.	1) 	
4. Burst Adjustment	1) While observing the vectorscope, adjust with RV202 so as to satisfy the specified value.	1) 	
5. R-Y Level Adjustment	1) While observing the vectorscope, adjust with RV201 so as to satisfy the specified value. *There are some time lag against the original phase. Therefore, adjust with PHASE volume on the vectorscope so that it becomes into "田". (Priority : Level)	1) 	

ITEM	PROCEDURE	SPECIFICATION	REMARKS
6. B-Y Level Adjustment	1) While observing the vectorscope, adjust with RV203 so as to satisfy the specified value. *There are some time lag against the original phase. Therefore, adjust with PHASE volume on the vectorscope so that it becomes into "田". (Priority : Level)	1) 	
7. Vector Check	1) Check the vectorscope indicator.	 Each point should be within this range. 	
8. Video Output Check	1) Connect an oscilloscope to TP501 on Pin Jack Board and check the waveform.	Each level : Within $\pm 10\%$ 	
9. Color Bar Picture Check	1) Check the color bar picture on the monitor TV screen.	 There should not be abnormality in brightness, color, the order of color, and others.	
10. AFC Frequency Adjustment	1) Connect with a jumper lead TP206 (TEST) and TP903 (+5 V) on Main Board. 2) Connect a frequency counter to TP209 on Main Board and adjust with RV207 so as to satisfy the specified value. 3) After adjustment release the jumper lead connection.	2) 15,734 kHz ± 50 Hz	

ITEM	PROCEDURE	SPECIFICATION	REMARKS								
11. Frame Reset Position Adjustment	1) Feed NTSC color composite signal to Video input. (Or signal of the laser disc.) Turn on LD switch and Edit switch. 2) Set S201 to TEST. 3) Connect an oscilloscope CH-1 to TP210 (VIDEO IN), CH-2 to TP104 (C. SYNC). 4) Adjust with RV208 the video input signal to C. SYNC phase. (Adjust each falling edge position of waveform.) 5) After adjustment, set S201 to NORMAL.	4) ± 0.5 H below									
12. Horizontally Synchronous Phase Adjustment	1) Connect each CH of an oscilloscope to the test points on Main Board, and adjust with RV206 the video input signal to GDC H. SYNC O and to the external input signal horizontally synchronous phase. <table><tr><td>Oscilloscope</td><td>Test point</td></tr><tr><td>CH-1</td><td>TP210 Video input signal</td></tr><tr><td>CH-2</td><td>TP208 H. SYNC O (GDC side)</td></tr><tr><td>CH-3 (CH-2')</td><td>TP209 H. SYNC O (External input)</td></tr></table> a) Adjust the falling edge position (phase) of the video input signal horizontally synchronous waveform to the rising edge of H. SYNC O waveform (Fig. 2) b) Confirm the video input (Fig. 1) is adjusted to horizontally synchronous position (phase) of H. SYNC (Fig. 3).	Oscilloscope	Test point	CH-1	TP210 Video input signal	CH-2	TP208 H. SYNC O (GDC side)	CH-3 (CH-2')	TP209 H. SYNC O (External input)	Each phase should be adjusted	EDIT switch ON ... ED FUNCTION switch "LD"
Oscilloscope	Test point										
CH-1	TP210 Video input signal										
CH-2	TP208 H. SYNC O (GDC side)										
CH-3 (CH-2')	TP209 H. SYNC O (External input)										
13. APC Adjustment	1) Set FUNCTION switch to CD KARAOKE and adjust the phase of the color burst signal on the vectorscope to the origin (0°). 2) Set FUNCTION switch to LD, and adjust with RV204 so as to satisfy the specified value while observing the vectorscope. *This adjustment should be performed after the superimpose system adjustments (AFC, Frame Reset, and Horizontally Synchronous Phase adjustments) are adjusted.		Each point should be within this range.								

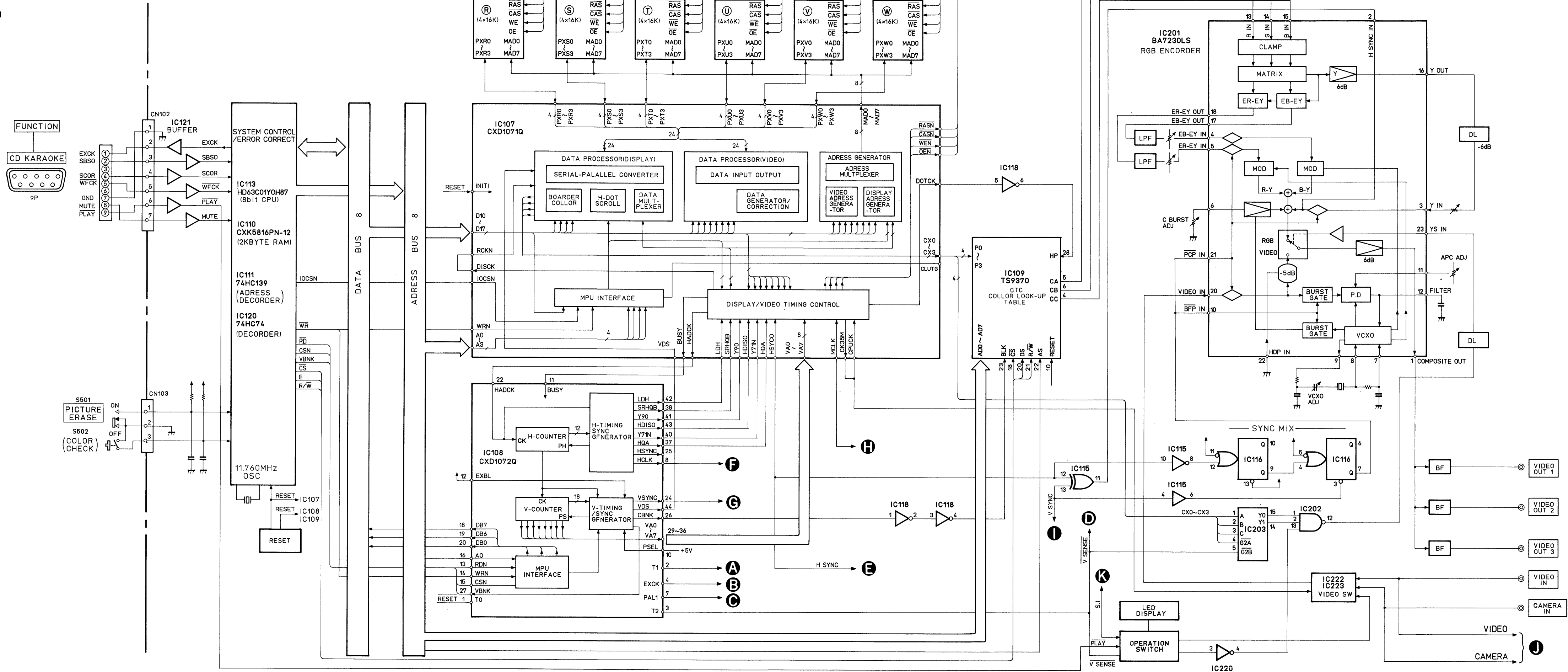
CHECKING ITEMS

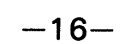
ITEM	PROCEDURE	SPECIFICATION	REMARKS
1. TEST Mode Release	1) Turn EDIT switch off (ART). 2) While observing the monitor TV screen, turn the power off and on again.	1) Picture on the monitor TV. Color Bar ↓ Black (OFF) ↓ Blue (ON)	
2. CAMERA Check	1) Set FUNCTION switch to CAMERA and set the CAMERA input system (the laser disc or the video system) to the play state, and check the monitor TV screen.	1) Check CAMERA input picture is on the screen and LED indicator is 'CAMERA'.	
3. LD Check	1) Set FUNCTION switch to LD and set the LD input system (the laser disc or the video system) to the play state, and check the monitor TV screen.	1) Check the LD input picture is on the screen and LED indication is 'LD'.	
4. CD KARAOKE Check (Automatic change)	1) Hold FUNCTION switch LD and set the CD player to the play state and check the monitor TV screen. 2) Set the CD player to the stop state. 3) Set FUNCTION switch to CAMERA and set the CD player to the play state and check the monitor TV screen. 4) Set the CD player to the stop state.	1) Check CD player input picture (or character) is on the screen and LED indication is 'CD'. 2) Check LD input picture is on the screen and LED indication is 'LD'. 3) Check CD player input picture (or character) is on the screen after CAMERA input signal and check the LED indication 'CAMERA' turns to 'CD'. 4) Check CAMERA input picture is on the screen and LED indication is 'CAMERA'.	
5. MUTE and PICTURE ERASE Check	1) Set FUNCTION switch to CD KARAOKE. 2) Turn PICTURE ERASE switch off, and set the CD player to the play state. When the picture is on about half of the screen, set the CD player to the pause state. 3) Set the CD player to the stop state. 4) Turn PICTURE ERASE switch on. 5) When the picture is on about half of the screen, set the CD player to the pause state. 6) Set the CD player to the stop state.	2) Check the picture is still on the half of the screen and there is no noise of FONT unit. 3) Check the picture continues to be above mentioned state. 4) Check the screen turns to blue. 5) Check the screen turns to blue after the picture appears on the half of the screen.	

ITEM	PROCEDURE	SPECIFICATION	REMARKS
6. EDIT Operation Check	1) Set FUNCTION switch to LD. (Set to the play state LD input instruments beforehand.) 2) Turn EDIT switch on (ED). 3) Set the CD player to the play state. 4) Set LD input (the laser disc or the video system) to the stop (or pause) state. 5) Set FUNCTION switch to CAMERA. (Set to the play state CAMERA input instruments beforehand.) 6) Set CAMERA input system instruments to the stop mode. 7) Turn EDIT switch off (ART).	1) LD input picture appears on the screen. LED indication turns 'LD'. 2) The screen turns blue. Check the LED indication turns 'ED'. 3) Check the CD player picture (character) mixes with LD input picture on the screen. LED indication turns 'CD', 'LD'. 4) Check LD input picture turns off. (Only the CD picture (character) is on the screen.) Check LED indication 'LD' turns off. 5) Check the CD player picture (character) mixes with CAMERA input picture on the screen. LED indication turns 'CD', 'CAMERA'. 6) Check CAMERA input picture turns off. (Only the CD picture (character) is on the screen.) Check LED indication 'CAMERA' turns off. 7) Check LED indication 'ED' turns off.	
7. Video Signal Output (2) Check	1) Check the monitor TV (2) screen.	1) The same picture as on the monitor TV (1) is on the monitor TV (2).	
8. Video Signal Output (3) Check	1) Check the monitor TV (3) screen.	1) The same picture as on the monitor TV (1) is on the monitor TV (3).	
9. Voltage Decrease Check	1) Set the AC power supply to -10% against the rated voltage and set the CD player to the play state. Check each monitor TV screen. Monitor TV (1) : Video Output 1 Monitor TV (2) : Video Output 2 TV (3 CH) : VHF Output	1) There is no flickering (mainly power supply ripples) on the screen. LED indicating brightness should not be unusual.	

SECTION 3
DIAGRAMS

3-1. VIDEO SIGNAL BLOCK DIAGRAM



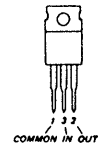


● Semiconductor Lead Layouts

BA7021
LVA516S
TC5081AP



M5F79M05



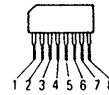
DTA114ES
DTC114ES



BA7230LS



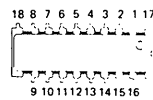
M5218L



2SA733
2SC2785

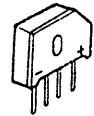


CXD1071Q

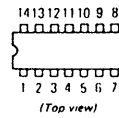
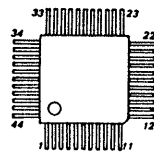


SN74HC14N
SN74HC74N
SN74LS628N
TC74HC00P
TC74HC02P
TC74HC11P
TC74HC86P
TC74HC107P
TC74HCU04P

KBU4D



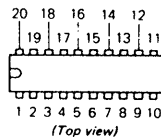
CXD1072Q



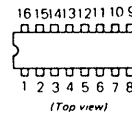
LT9010H



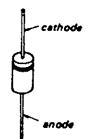
CXK5816PN-12L
SN74LS245N



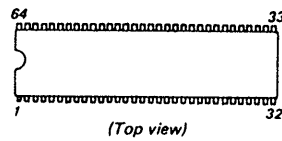
SN74LS123N
SN74LS221N
TC74HC138P
TC74HC139P
TC74HC163P
TC74HC175P
TC74HC4538P



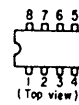
1SS120



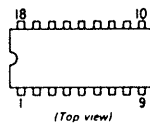
HD63C01YOH87P



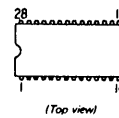
TL062CP



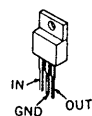
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TS93701P20



M5F7805



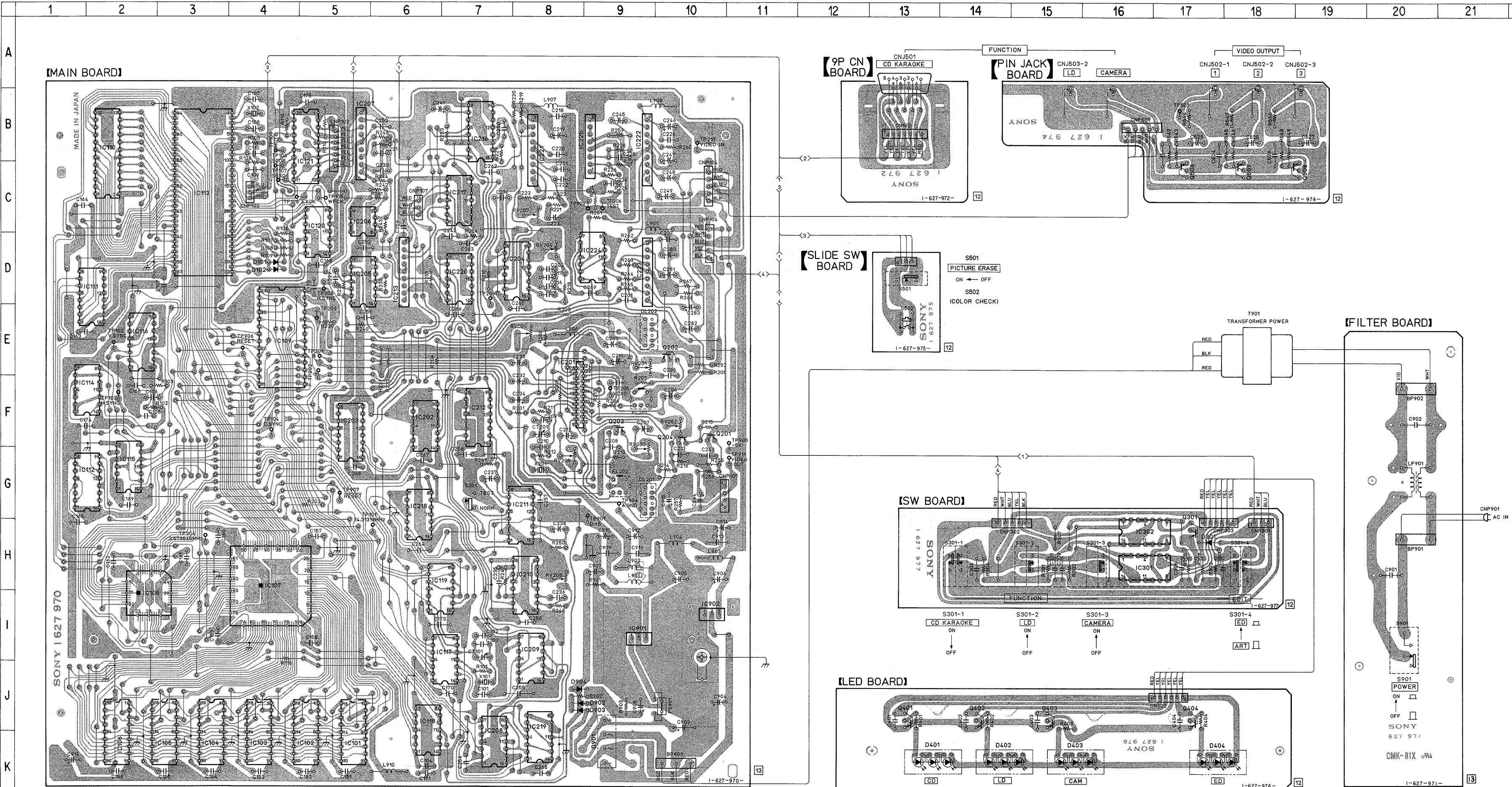
3-3. PRINTED WIRING BOARDS

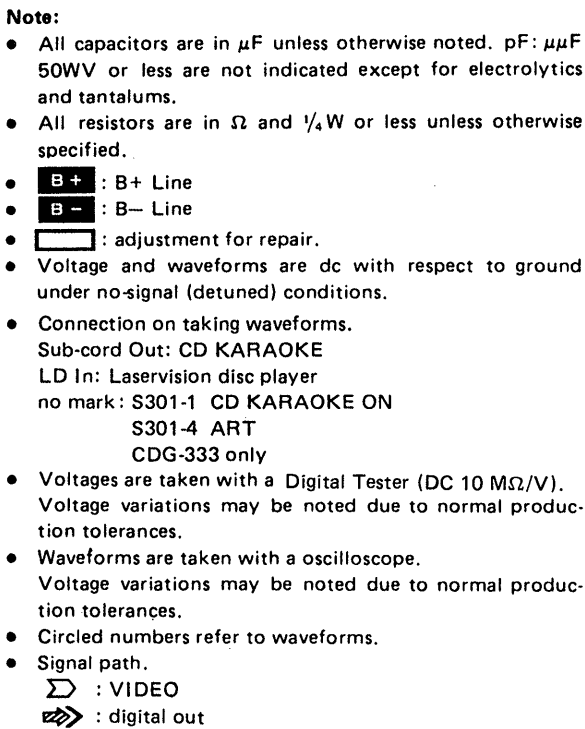
● Semiconductor Location

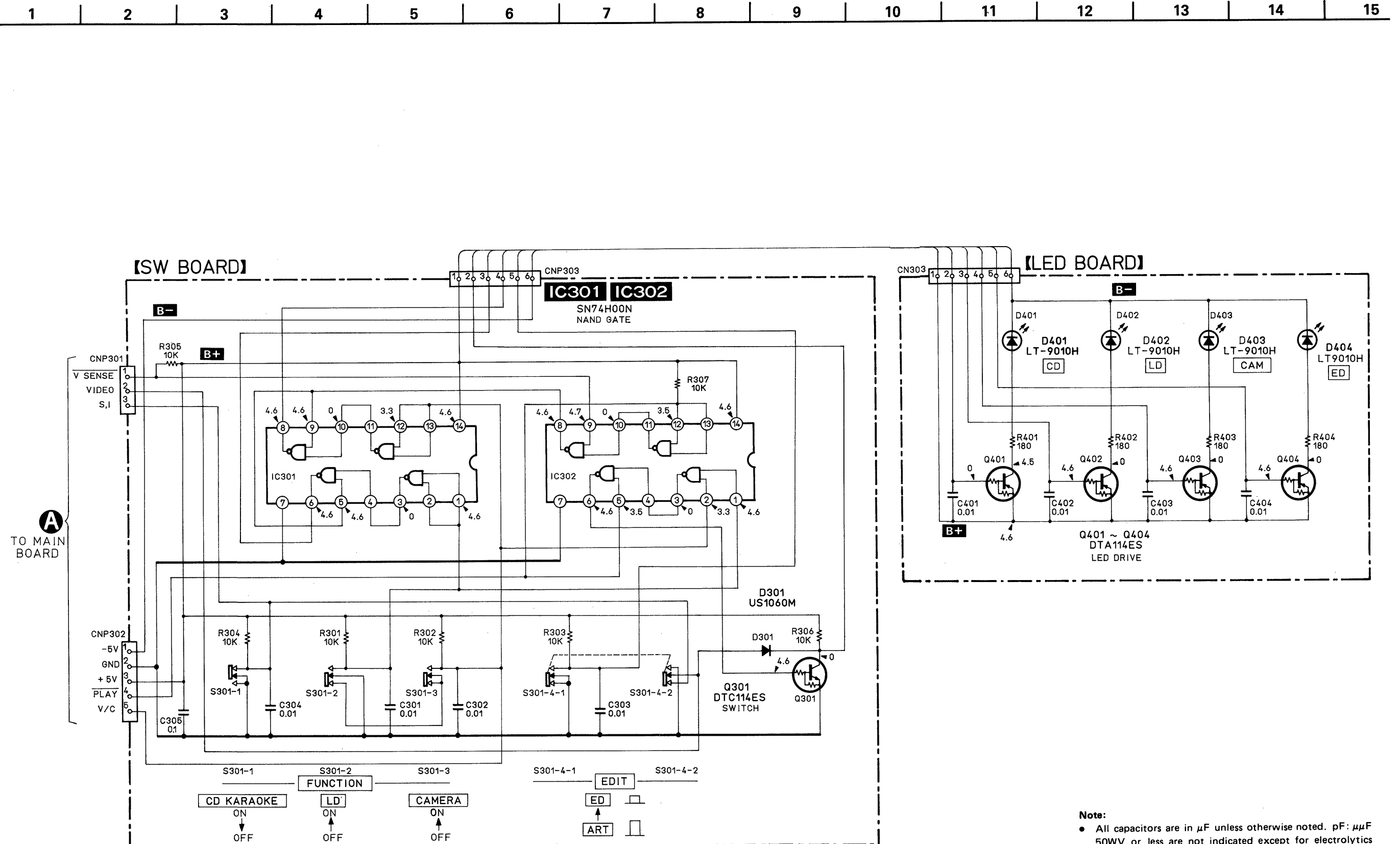
Ref. No.	Location	Ref. No.	Location
D101	D-4	IC205	D-5
D102	D-4	IC206	C-5
D301	H-17	IC207	B-5
D401	K-13	IC208	K-7
D402	K-14	IC209	I-8
D403	K-15	IC210	H-8
D404	K-17	IC211	G-8
D901	K-9	IC212	F-7
D902	J-8	IC213	D-6
D903	J-8	IC216	B-7
D904	J-8	IC217	C-7
		IC218	G-6
IC101	K-5	IC219	K-8
IC102	K-5	IC220	D-7
IC103	K-4	IC221	B-8
IC104	K-3	IC222	B-9
IC105	K-3	IC223	D-9
IC106	K-2	IC224	D-9
IC107	H-4	IC225	B-9
IC108	I-2	IC301	H-16
IC109	E-4	IC302	H-16
IC110	B-2	IC901	I-9
IC111	D-2	IC902	I-10
IC112	G-1		
IC113	C-3	Q201	F-10
IC114	F-1	Q202	E-10
IC115	G-2	Q203	F-9
IC116	E-2	Q204	F-10
IC117	I-7	Q301	H-17
IC118	J-6	Q401	J-13
IC119	I-6	Q402	J-14
IC120	C-5	Q403	J-15
IC121	B-5	Q404	C-17
IC201	F-8	Q506	C-17
IC202	F-6	Q507	C-18
IC203	F-5	Q508	C-19
IC204	D-8		

Note:

- : parts extracted from the component side.
- : parts mounted on the conductor side.
- : indicates side identified with part number.
- : Jumper wire connected to the ground pattern on the component side.

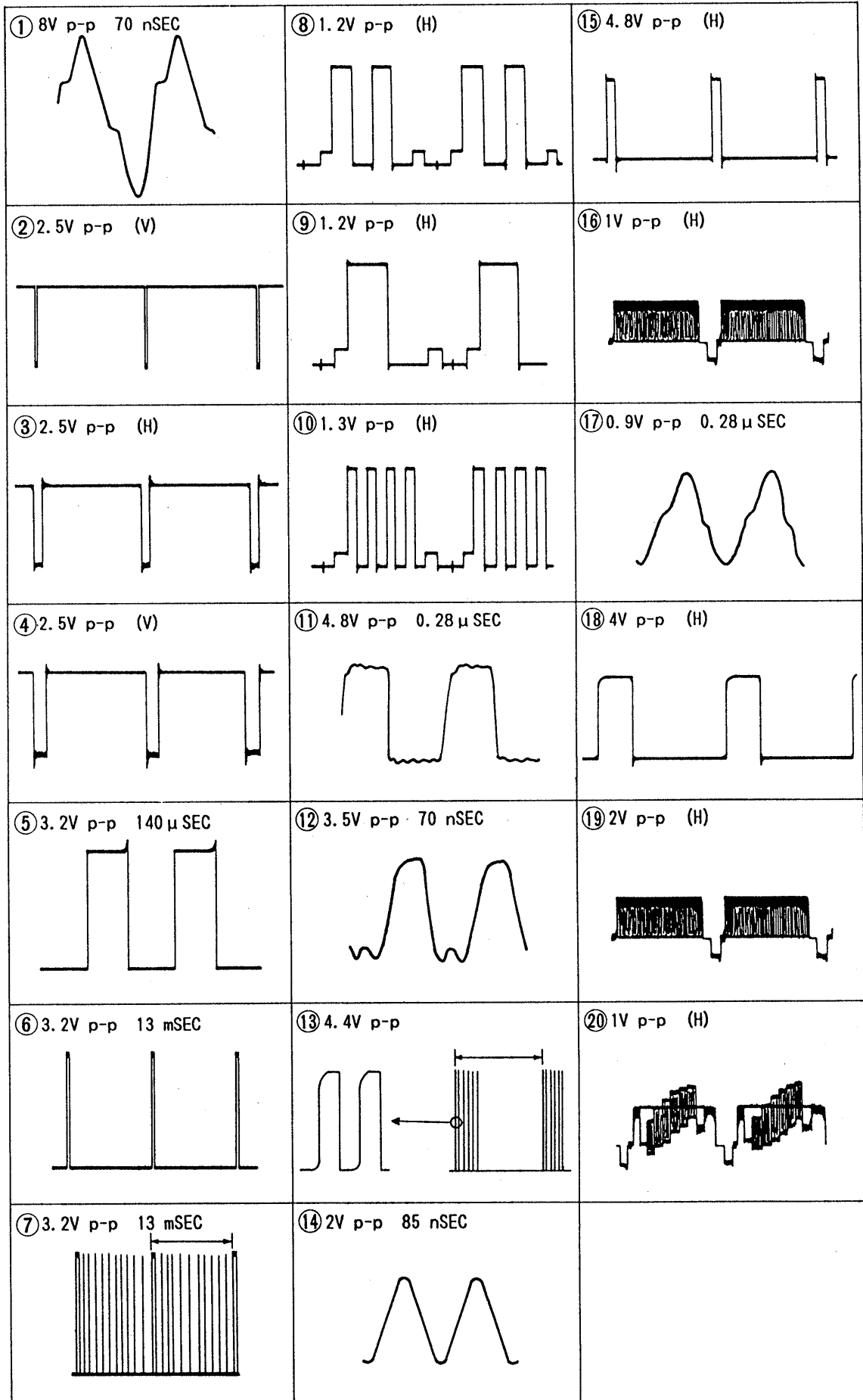




**Note:**

- All capacitors are in μF unless otherwise noted. pF : μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- **B+**: B+ Line
- **B-**: B- Line
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages are taken with a Digital Tester (DC 10 M Ω /V). Voltage variations may be noted due to normal production tolerances.

● Waveforms



SECTION 4

EXPLODED VIEW

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.

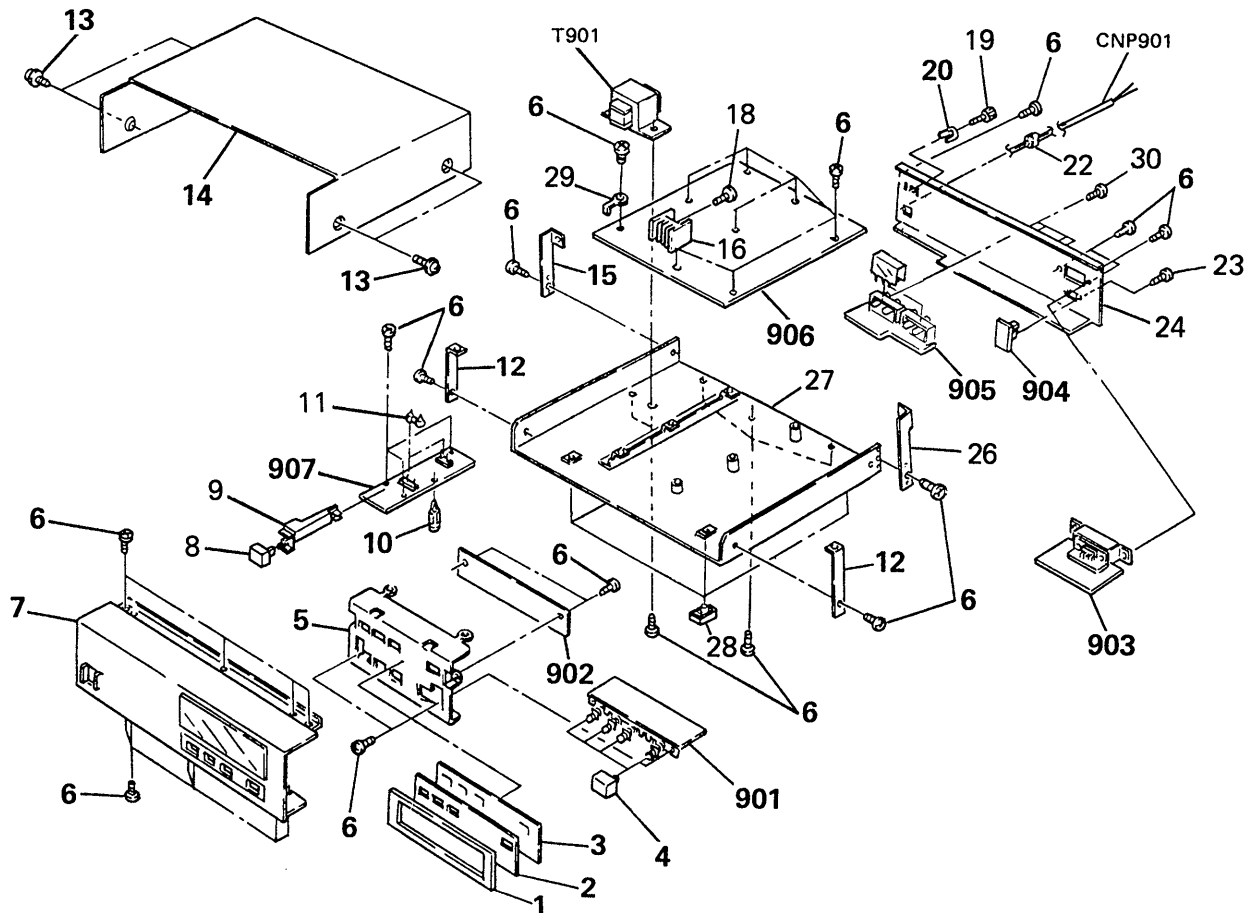
- Color Indication of Appearance Parts
Example:

(RED) ... KNOB, BALANCE (WHITE)

↑
Cabinet's Color

↑
Parts Color

The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	*4-913-614-01	PLATE, SHIELD		22	*3-703-244-00	BUSHING (2104), CORD	
2	*4-913-608-01	PLATE (A), INDICATION		23	7-621-255-25	SCREW +P 2X4	
3	*4-913-653-01	PLATE (B), INDICATION		24	*4-913-645-21	PANEL, BACK	
4	4-879-487-31	PUSH BUTTON		26	*4-913-602-01	ANGLE (RIGHT)	
5	*4-913-617-01	BRACKET, SW		27	*X-4913-601-1	CHASSIS ASSY	
6	7-682-547-04	SCREW +BVT 3X6 (S)		28	X-4875-505-0	FOOT ASSY, MF	
7	A-4604-926-A	PANEL ASSY, FRONT		29	4-870-539-00	PLATE, GROUND	
8	4-887-548-11	KNOB (17X19), SQUARE		30	7-685-647-79	SCREW +BVT 3X10 TYPE2 N-S	
9	*4-913-646-01	LEVER (POWER SWITCH)		901	*1-627-977-11	PC BOARD, SW	
10	*4-861-614-00	HOLDER, PC BOARD		902	*1-627-976-11	PC BOARD, LED	
11	*4-912-963-01	COVER (2P), TERMINAL		903	*1-627-972-11	PC BOARD, 9P-CN	
12	*4-913-605-01	BRACKET, F PANEL		904	*1-627-975-11	PC BOARD, SLIDE SWITCH	
13	4-820-330-31	SCREW		905	*1-627-974-11	PC BOARD, PIN JACK	
14	4-913-623-01	CASE		906	*A-4651-229-A	MOUNTED PCB, MAIN	
15	*4-913-603-01	ANGLE (LEFT)		907	*1-627-971-11	PC BOARD, FILTER	
16	*4-363-147-00	HEAT SINK, H.PIN		△CNP901	*1-556-562-00	CORD, POWER	
18	7-682-648-09	SCREW +PS 3X8		T901	△.1-460-735-11	TRANSFORMER, POWER	
19	3-706-165-00	SCREW					
20	3-701-993-00	SPACER, TERMINAL					

SECTION 5

ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:MF: μ F, PF: μ μ F.**RESISTORS**

- All resistors are in ohms.
- F: nonflammable

COILS

- MMH: mH, UH: μ H

SEMICONDUCTORSIn each case, U: μ , for example:UA...: μ A..., UPA...: μ PA...,UPC...: μ PC, UPD...: μ PD...

The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description					Ref.No.	Part No.	Description				
901	*1-627-977-11	PC BOARD, SW					C202	1-102-658-00	CERAMIC	180PF (PH)	5%	50V	
902	*1-627-976-11	PC BOARD, LED					C203	1-124-443-00	ELECT	100MF	20%	10V	
903	*1-627-972-11	PC BOARD, 9P-CN					C204	1-124-927-11	ELECT	4.7MF	20%	50V	
904	*1-627-975-11	PC BOARD, SLIDE SWITCH					C205	1-164-159-11	CERAMIC	0.1MF		50V	
905	*1-627-974-11	PC BOARD, PIN JACK					C206	1-136-161-00	FILM	0.047MF	5%	50V	
906	*A-4651-229-A	MOUNTED PCB, MAIN					C207	1-124-499-11	ELECT	1MF	20%	50V	
907	*1-627-971-11	PC BOARD, FILTER					C208	1-161-379-00	CERAMIC	0.01MF	30%	16V	
BP901	*1-535-139-00	BASE POST 22MM (10MM PITCH) 2P					C209	1-101-880-00	CERAMIC	47PF	5%	50V	
BP902	*1-535-139-00	BASE POST 22MM (10MM PITCH) 2P					C210	1-101-888-00	CERAMIC	68PF	5%	50V	
BP903	*1-535-116-00	TERMINAL					C211	1-124-499-11	ELECT	1MF	20%	50V	
C101	1-102-816-00	CERAMIC	120PF	5%	50V		C212	1-124-499-11	ELECT	1MF	20%	50V	
C102	1-102-971-00	CERAMIC	82PF	5%	50V		C213	1-162-199-31	CERAMIC	10PF	5%	50V	
C103	1-162-199-31	CERAMIC	10PF	5%	50V		C214	1-102-658-00	CERAMIC	180PF (PH)	5%	50V	
C104	1-162-286-31	CERAMIC	220PF	10%	50V		C215	1-102-531-00	CERAMIC	150PF (CH)	5%	50V	
C105	1-162-282-31	CERAMIC	100PF	10%	50V		C216	1-102-531-00	CERAMIC	150PF (CH)	5%	50V	
C106	1-101-880-00	CERAMIC	47PF	5%	50V		C217	1-102-658-00	CERAMIC	180PF (PH)	5%	50V	
C107	1-102-962-00	CERAMIC	30PF	5%	50V		C218	1-164-159-11	CERAMIC	0.1MF		50V	
C108	1-102-962-00	CERAMIC	30PF	5%	50V		C219	1-124-471-00	ELECT	1000MF	20%	6.3V	
C109	1-161-379-00	CERAMIC	0.01MF	30%	16V		C220	1-162-291-31	CERAMIC	560PF	10%	50V	
C110	1-161-379-00	CERAMIC	0.01MF	30%	16V		C221	1-102-123-00	CERAMIC	0.0033MF	10%	50V	
C151	1-162-179-11	CERAMIC	0.1MF		50V		C222	1-136-157-00	FILM	0.022MF	5%	50V	
C152	1-162-179-11	CERAMIC	0.1MF		50V		C223	1-124-499-11	ELECT	1.0MF	20%	50V	
C153	1-162-179-11	CERAMIC	0.1MF		50V		C224	1-136-165-00	FILM	0.1MF	5%	50V	
C154	1-162-179-11	CERAMIC	0.1MF		50V		C225	1-162-291-31	CERAMIC	560PF	10%	50V	
C155	1-162-179-11	CERAMIC	0.1MF		50V		C226	1-164-159-11	CERAMIC	0.1MF		50V	
C156	1-162-179-11	CERAMIC	0.1MF		50V		C227	1-164-159-11	CERAMIC	0.1MF		50V	
C157	1-162-179-11	CERAMIC	0.1MF		50V		C229	1-102-951-00	CERAMIC	15PF	5%	50V	
C158	1-162-179-11	CERAMIC	0.1MF		50V		C230	1-136-153-00	FILM	0.01MF	5%	50V	
C159	1-162-179-11	CERAMIC	0.1MF		50V		C231	1-136-163-00	FILM	0.068MF	5%	50V	
C160	1-162-179-11	CERAMIC	0.1MF		50V		C232	1-124-477-11	ELECT	47MF	20%	16V	
C161	1-162-179-11	CERAMIC	0.1MF		50V		C233	1-124-477-11	ELECT	47MF	20%	16V	
C162	1-162-179-11	CERAMIC	0.1MF		50V		C234	1-124-477-11	ELECT	47MF	20%	16V	
C163	1-164-159-11	CERAMIC	0.1MF		50V		C235	1-162-282-31	CERAMIC	100PF	10%	50V	
C164	1-164-159-11	CERAMIC	0.1MF		50V		C236	1-136-161-00	FILM	0.047MF	5%	50V	
C165	1-164-159-11	CERAMIC	0.1MF		50V		C237	1-124-499-11	ELECT	1MF	20%	50V	
C166	1-164-159-11	CERAMIC	0.1MF		50V		C238	1-124-499-11	ELECT	1MF	20%	50V	
C167	1-164-159-11	CERAMIC	0.1MF		50V		C241	1-124-499-11	ELECT	1MF	20%	50V	
C168	1-164-159-11	CERAMIC	0.1MF		50V		C242	1-161-379-00	CERAMIC	0.01MF	30%	16V	
C169	1-164-159-11	CERAMIC	0.1MF		50V		C243	1-164-159-11	CERAMIC	0.1MF		50V	
C170	1-164-159-11	CERAMIC	0.1MF		50V		C244	1-124-443-00	ELECT	100MF	20%	10V	
C171	1-164-159-11	CERAMIC	0.1MF		50V		C245	1-123-875-11	ELECT	10MF	20%	50V	
C172	1-164-159-11	CERAMIC	0.1MF		50V		C246	1-124-443-00	ELECT	100MF	20%	10V	
C173	1-164-159-11	CERAMIC	0.1MF		50V		C247	1-124-499-11	ELECT	1MF	20%	50V	
C174	1-164-159-11	CERAMIC	0.1MF		50V		C248	1-124-499-11	ELECT	1MF	20%	50V	
C175	1-164-159-11	CERAMIC	0.1MF		50V		C249	1-124-499-11	ELECT	1MF	20%	50V	
C201	1-162-282-31	CERAMIC	100PF	10%	50V								

Ref.No.	Part No.	Description			
C250	1-162-294-31	CERAMIC	0.001MF	10%	50V
C251	1-162-179-11	CERAMIC	0.1MF		50V
C252	1-164-159-11	CERAMIC	0.1MF		50V
C253	1-164-159-11	CERAMIC	0.1MF		50V
C254	1-164-159-11	CERAMIC	0.1MF		50V
C255	1-164-159-11	CERAMIC	0.1MF		50V
C256	1-164-159-11	CERAMIC	0.1MF		50V
C257	1-164-159-11	CERAMIC	0.1MF		50V
C258	1-164-159-11	CERAMIC	0.1MF		50V
C259	1-164-159-11	CERAMIC	0.1MF		50V
C260	1-164-159-11	CERAMIC	0.1MF		50V
C262	1-164-159-11	CERAMIC	0.1MF		50V
C263	1-164-159-11	CERAMIC	0.1MF		50V
C264	1-164-159-11	CERAMIC	0.1MF		50V
C265	1-164-159-11	CERAMIC	0.1MF		50V
C266	1-164-159-11	CERAMIC	0.1MF		50V
C267	1-164-159-11	CERAMIC	0.1MF		50V
C268	1-164-159-11	CERAMIC	0.1MF		50V
C269	1-164-159-11	CERAMIC	0.1MF		50V
C280	1-124-443-00	ELECT	100MF	20%	10V
C281	1-123-875-11	ELECT	10MF	20%	50V
C282	1-124-499-11	ELECT	1MF	20%	50V
C283	1-124-499-11	ELECT	1MF	20%	50V
C301	1-161-379-00	CERAMIC	0.01MF	30%	16V
C302	1-161-379-00	CERAMIC	0.01MF	30%	16V
C303	1-161-379-00	CERAMIC	0.01MF	30%	16V
C304	1-161-379-00	CERAMIC	0.01MF	30%	16V
C305	1-164-159-11	CERAMIC	0.1MF		50V
C401	1-161-379-00	CERAMIC	0.01MF	30%	16V
C402	1-161-379-00	CERAMIC	0.01MF	30%	16V
C403	1-161-379-00	CERAMIC	0.01MF	30%	16V
C404	1-161-379-00	CERAMIC	0.01MF	30%	16V
C522	1-164-159-11	CERAMIC	0.1MF		50V
C523	1-124-471-00	ELECT	1000MF	20%	6.3V
C524	1-164-159-11	CERAMIC	0.1MF		50V
C525	1-124-471-00	ELECT	1000MF	20%	6.3V
C526	1-164-159-11	CERAMIC	0.1MF		50V
C527	1-124-471-00	ELECT	1000MF	20%	6.3V
C901	1-161-741-00	CERAMIC	1000PF	10%	400V
C902	1-136-279-11	FILM	0.047MF	20%	250V
C903	1-124-898-11	ELECT	4700MF	20%	16V
C904	1-124-360-00	ELECT	1000MF	20%	16V
C905	1-124-893-11	ELECT	2200MF	20%	10V
C906	1-124-471-00	ELECT	1000MF	20%	6.3V
C907	1-123-875-11	ELECT	10MF	20%	50V
C908	1-123-875-11	ELECT	10MF	20%	50V
C909	1-164-159-11	CERAMIC	0.1MF		50V
C910	1-124-477-11	ELECT	47MF	20%	16V
C911	1-164-159-11	CERAMIC	0.1MF		50V
C912	1-123-875-11	ELECT	10MF	20%	50V
C913	1-164-159-11	CERAMIC	0.1MF		50V
C914	1-124-477-11	ELECT	47MF	20%	16V
C915	1-124-443-00	ELECT	100MF	20%	10V
C916	1-124-893-11	ELECT	2200MF	20%	10V
CNJ501	1-568-200-11	SOCKET, CONNECTOR 9P			
CNJ502	1-507-845-61	JACK, PIN (A)			
CNJ503	1-563-144-21	JACK, PIN 2P			

Ref.No.	Part No.	Description
CNP102	*1-564-341-11	PIN, CONNECTOR 7P
CNP103	*1-564-337-00	PIN, CONNECTOR 3P
CNP104	*1-564-508-11	PLUG, CONNECTOR 5P
CNP105	*1-564-507-11	PLUG, CONNECTOR 4P
CNP106	*1-564-508-11	PLUG, CONNECTOR 5P
CNP107	*1-564-506-11	PLUG, CONNECTOR 3P
CNP301	*1-564-506-11	PLUG, CONNECTOR 3P
CNP302	*1-564-508-11	PLUG, CONNECTOR 5P
CNP303	*1-564-340-00	PIN, CONNECTOR 6P
CNP501	*1-564-508-11	PLUG, CONNECTOR 5P
△CNP901	1-556-562-00	CORD, POWER
CT101	1-141-227-00	CAP, TRIMMER
CT201	1-141-266-31	CAP, TRIMMER
D101	8-719-912-20	DIODE 1SS120
D102	8-719-912-20	DIODE 1SS120
D301	8-719-912-20	DIODE 1SS120
D401	8-719-901-49	DIODE LT-9010H
D402	8-719-901-49	DIODE LT-9010H
D403	8-719-901-49	DIODE LT-9010H
D404	8-719-901-49	DIODE LT-9010H
D901	8-719-948-95	DIODE KBU4D
D902	8-719-912-20	DIODE 1SS120
D903	8-719-912-20	DIODE 1SS120
D904	8-719-912-20	DIODE 1SS120
DL201	1-415-630-11	DELAY LINE
DL202	1-415-630-11	DELAY LINE
FL201	1-235-782-11	FILTER, LOW PASS
FL202	1-235-782-11	FILTER, LOW PASS
IC101	8-759-915-82	IC MB81416-12P
IC102	8-759-915-82	IC MB81416-12P
IC103	8-759-915-82	IC MB81416-12P
IC104	8-759-915-82	IC MB81416-12P
IC105	8-759-915-82	IC MB81416-12P
IC106	8-759-915-82	IC MB81416-12P
IC107	8-759-206-76	IC CXD1071Q
IC108	8-759-206-77	IC CXD1072Q
IC109	8-759-978-68	IC TS93701P-20
IC110	8-752-321-00	IC CXK5816PN-12L
IC111	8-759-202-89	IC TC74HC139P
IC112	8-759-203-01	IC TC74HC175P
IC113	8-759-321-68	IC HD63C01YOH87PJ
IC114	8-759-202-11	IC TC74HC00P
IC115	8-759-202-24	IC TC74HC86P
IC116	8-759-203-83	IC TC74HC4538P
IC117	8-759-202-13	IC TC74HCU04P
IC118	8-759-916-20	IC SN74HC14N
IC119	8-759-202-11	IC TC74HC00P
IC120	8-759-916-29	IC SN74HC74N
IC121	8-759-902-45	IC SN74LS245N
IC201	8-759-914-57	IC BA7230LS
IC202	8-759-202-16	IC TC74HC11P
IC203	8-759-202-26	IC TC74HC138P

Note: The components identified by mark **△** or dotted line with mark **△** are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description
IC204	8-759-902-21	IC SN74LS221N
IC205	8-759-906-28	IC SN74LS628N
IC206	8-759-990-62	IC TL062CP
IC207	8-759-250-81	IC TC5081AP
IC208	8-759-916-29	IC SN74HC74N
IC209	8-759-202-83	IC TC74HC107P
IC210	8-759-902-21	IC SN74LS221N
IC211	8-759-902-21	IC SN74LS221N
IC212	8-759-202-32	IC TC74HC163P
IC213	8-759-250-81	IC TC5081AP
IC216	8-759-901-23	IC SN74LS123N
IC217	8-759-202-11	IC TC74HC00P
IC218	8-759-202-11	IC TC74HC00P
IC219	8-759-202-11	IC TC74HC00P
IC220	8-759-202-13	IC TC74HC004P
IC221	8-759-982-64	IC LVA516S
IC222	8-759-927-56	IC BA7021
IC223	8-759-927-56	IC BA7021
IC224	8-759-202-12	IC TC74HC02P
IC225	8-759-600-02	IC M5218L
IC301	8-759-202-11	IC TC74HC00P
IC302	8-759-202-11	IC TC74HC00P
IC901	8-759-604-29	IC M5F7805
IC902	8-759-604-41	IC M5F79M05
L901	1-408-117-00	INDUCTOR 10UH
L902	1-408-080-00	INDUCTOR 100UH
L903	1-408-117-00	INDUCTOR 10UH
L904	1-408-117-00	INDUCTOR 10UH
L906	1-408-080-00	INDUCTOR 100UH
L907	1-408-080-00	INDUCTOR 100UH
L908	1-408-080-00	INDUCTOR 100UH
L909	1-408-080-00	INDUCTOR 100UH
L910	1-408-117-00	INDUCTOR 10UH
LF901A	1-421-960-11	TRANSFORMER, LINE FILTER
PS901A	1-532-637-00	LINK, IC
Q201	8-729-119-78	TRANSISTOR 2SC2785
Q202	8-729-119-78	TRANSISTOR 2SC2785
Q203	8-729-119-78	TRANSISTOR 2SC2785
Q204	8-729-173-38	TRANSISTOR 2SA733
Q301	8-729-900-80	TRANSISTOR DTC114ES
Q401	8-729-900-61	TRANSISTOR DTA114ES
Q402	8-729-900-61	TRANSISTOR DTA114ES
Q403	8-729-900-61	TRANSISTOR DTA114ES
Q404	8-729-900-61	TRANSISTOR DTA114ES
Q506	8-729-119-78	TRANSISTOR 2SC2785
Q507	8-729-119-78	TRANSISTOR 2SC2785
Q508	8-729-119-78	TRANSISTOR 2SC2785
R101	1-247-901-11	CARBON 820K 5% 1/4W
R102	1-249-433-11	CARBON 22K 5% 1/4W
R103	1-249-428-11	CARBON 8.2K 5% 1/4W
R104	1-249-433-11	CARBON 22K 5% 1/4W
R105	1-249-433-11	CARBON 22K 5% 1/4W
R106	1-249-425-11	CARBON 4.7K 5% 1/4W
R107	1-249-425-11	CARBON 4.7K 5% 1/4W
R108	1-249-425-11	CARBON 4.7K 5% 1/4W
R109	1-249-425-11	CARBON 4.7K 5% 1/4W

Ref.No.	Part No.	Description
R110	1-249-429-11	CARBON 10K 5% 1/4W
R114	1-249-421-11	CARBON 2.2K 5% 1/4W
R115	1-249-430-11	CARBON 12K 5% 1/4W
R201	1-249-421-11	CARBON 2.2K 5% 1/4W
R202	1-249-421-11	CARBON 2.2K 5% 1/4W
R203	1-249-417-11	CARBON 1K 5% 1/4W
R204	1-249-417-11	CARBON 1K 5% 1/4W
R205	1-249-429-11	CARBON 10K 5% 1/4W
R206	1-249-417-11	CARBON 1K 5% 1/4W
R207	1-249-425-11	CARBON 4.7K 5% 1/4W
R208	1-249-419-11	CARBON 1.5K 5% 1/4W
R209	1-249-417-11	CARBON 1K 5% 1/4W
R210	1-249-423-11	CARBON 3.3K 5% 1/4W
R211	1-249-414-11	CARBON 560 5% 1/4W
R212	1-249-418-11	CARBON 1.2K 5% 1/4W
R213	1-249-417-11	CARBON 1K 5% 1/4W
R214	1-249-413-11	CARBON 470 5% 1/4W
R215	1-249-413-11	CARBON 470 5% 1/4W
R216	1-249-429-11	CARBON 10K 5% 1/4W
R217	1-214-777-00	METAL 100K 1% 1/4W
R218	1-214-775-00	METAL 82K 1% 1/4W
R219	1-249-429-11	CARBON 10K 5% 1/4W
R220	1-249-429-11	CARBON 10K 5% 1/4W
R221	1-249-422-11	CARBON 2.7K 5% 1/4W
R222	1-249-434-11	CARBON 27K 5% 1/4W
R223	1-249-428-11	CARBON 8.2K 5% 1/4W
R224	1-247-903-00	CARBON 1M 5% 1/4W
R225	1-249-417-11	CARBON 1K 5% 1/4W
R226	1-249-429-11	CARBON 10K 5% 1/4W
R227	1-249-429-11	CARBON 10K 5% 1/4W
R228	1-249-414-11	CARBON 560 5% 1/4W
R229	1-249-441-11	CARBON 100K 5% 1/4W
R230	1-249-415-11	CARBON 680 5% 1/4W
R231	1-249-415-11	CARBON 680 5% 1/4W
R232	1-249-415-11	CARBON 680 5% 1/4W
R238	1-249-415-11	CARBON 680 5% 1/4W
R239	1-249-426-11	CARBON 5.6K 5% 1/4W
R240	1-249-426-11	CARBON 5.6K 5% 1/4W
R241	1-249-426-11	CARBON 5.6K 5% 1/4W
R242	1-249-426-11	CARBON 5.6K 5% 1/4W
R243	1-249-426-11	CARBON 5.6K 5% 1/4W
R244	1-249-426-11	CARBON 5.6K 5% 1/4W
R245	1-249-429-11	CARBON 10K 5% 1/4W
R246	1-249-425-11	CARBON 4.7K 5% 1/4W
R247	1-249-425-11	CARBON 4.7K 5% 1/4W
R248	1-249-434-11	CARBON 27K 5% 1/4W
R249	1-249-441-11	CARBON 100K 5% 1/4W
R250	1-249-432-11	CARBON 18K 5% 1/4W
R251	1-249-441-11	CARBON 100K 5% 1/4W
R252	1-249-429-11	CARBON 10K 5% 1/4W
R253	1-249-441-11	CARBON 100K 5% 1/4W
R254	1-249-429-11	CARBON 10K 5% 1/4W
R255	1-249-417-11	CARBON 1K 5% 1/4W
R256	1-249-417-11	CARBON 1K 5% 1/4W
R257	1-249-421-11	CARBON 2.2K 5% 1/4W
R259	1-249-429-11	CARBON 10K 5% 1/4W
R260	1-249-429-11	CARBON 10K 5% 1/4W

Note: The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description			
R261	1-249-429-11	CARBON	10K	5%	1/4W
R262	1-249-429-11	CARBON	10K	5%	1/4W
R263	1-249-429-11	CARBON	10K	5%	1/4W
R264	1-249-429-11	CARBON	10K	5%	1/4W
R265	1-249-429-11	CARBON	10K	5%	1/4W
R266	1-247-804-11	CARBON	75	5%	1/4W
R267	1-247-804-11	CARBON	75	5%	1/4W
R301	1-249-429-11	CARBON	10K	5%	1/4W
R302	1-249-429-11	CARBON	10K	5%	1/4W
R303	1-249-429-11	CARBON	10K	5%	1/4W
R304	1-249-429-11	CARBON	10K	5%	1/4W
R305	1-249-429-11	CARBON	10K	5%	1/4W
R306	1-249-429-11	CARBON	10K	5%	1/4W
R307	1-249-429-11	CARBON	10K	5%	1/4W
R401	1-249-408-11	CARBON	180	5%	1/4W
R402	1-249-408-11	CARBON	180	5%	1/4W
R403	1-249-408-11	CARBON	180	5%	1/4W
R404	1-249-408-11	CARBON	180	5%	1/4W
R542	1-249-405-11	CARBON	100	5%	1/4W
R543	1-249-403-11	CARBON	68	5%	1/4W
R544	1-249-429-11	CARBON	10K	5%	1/4W
R545	1-249-405-11	CARBON	100	5%	1/4W
R546	1-249-403-11	CARBON	68	5%	1/4W
R547	1-249-429-11	CARBON	10K	5%	1/4W
R548	1-249-405-11	CARBON	100	5%	1/4W
R549	1-249-403-11	CARBON	68	5%	1/4W
R550	1-249-429-11	CARBON	10K	5%	1/4W
R901	1-249-441-11	CARBON	100K	5%	1/4W
R902	1-249-401-11	CARBON	47	5%	1/4W
R903	1-249-417-11	CARBON	1K	5%	1/4W
RV201	1-238-588-11	RES, ADJ, METAL GRAZE 470			
RV202	1-238-589-11	RES, ADJ, METAL GRAZE 4.7K			
RV203	1-238-588-11	RES, ADJ, METAL GRAZE 470			
RV204	1-238-590-11	RES, ADJ, METAL GRAZE 10K			
RV205	1-237-953-11	RES, ADJ, METAL GRAZE 1K			
RV206	1-238-026-11	RES, ADJ, METAL GRAZE 47K			
RV207	1-238-590-11	RES, ADJ, METAL GRAZE 10K			
RV208	1-238-026-11	RES, ADJ, METAL GRAZE 47K			

Ref.No.	Part No.	Description
S201	1-553-977-00	SWITCH, SLIDE (TEST/NORMAL)
S301	1-570-519-11	SWITCH, PUSH (4 KEY)(FUNCTION/EDIT)
S501	1-554-391-00	SWITCH, SLIDE (PICTURE ERASE)
S502	1-570-313-11	SWITCH, KEY BOARD (COLOR CHECK)
S901	△.1-553-318-31	SWITCH, PUSH (AC POWER)(1 KEY)
T901	△.1-450-735-11	TRANSFORMER, POWER
X101	1-527-722-00	OSCILLATOR, CRYSTAL (14.31818MHz)
X102	1-577-174-11	VIBRATOR, CRYSTAL (11.76MHz)
X201	1-567-505-11	OSCILLATOR, CRYSTAL (3.579545MHz)

ACCESSORY & PACKING MATERIAL

1-506-687-11	PLUG, PIN
3-786-720-41	MANUAL, INSTRUCTION (ENGLISH)
*4-913-629-01	CUSHION (RIGHT), LOWER
*4-913-630-01	CUSHION (LEFT), LOWER
*4-913-631-01	CUSHION (RIGHT), UPPER
*4-913-632-01	CUSHION (LEFT), UPPER
*4-913-656-11	INDIVIDUAL CARTON

Note: The components identified by mark △ or dotted line with mark 1 are critical for safety. Replace only with part number specified.